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THE RELATIONSHIP BETWEEN LOCUS OF CONTROL
AND RESISTANCE IN A SIMULATED
PRISONER OF WAR COMPOUND

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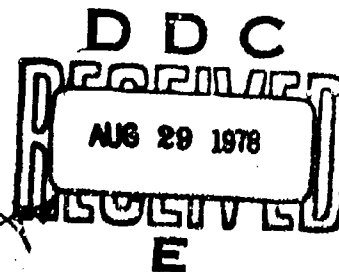
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INTRODUCTION

Research on the captivity experience of American prisoners of war (POWs) in Southeast Asia has demonstrated a considerable amount of variability among the POWs with respect to their capability of coping with the extreme stresses of captivity and in terms of the resistance posture selected to counteract enemy demands (Hutchins, 1975; Hutchins and Offutt, 1976a; Hutchins and Offutt, 1976b; and Hunter and Phelan, 1978). This research has further found that a significant determinant of this variability in performance was the personality profile of the POW. The personality factors found to be positively related to a firm resistance posture were achievement, dominance, and endurance. These same personality factors have been shown to be indicative of a strong belief that an individual has sufficient control over his environment to attain those goals of importance to him (Hersch and Scheibe, 1967). This concept of individual control was touched upon by Rear Admiral Stockdale (1975), the senior Navy POW, when he described those POWs who successfully coped with the stress of captivity as being "inner directed" and those least successful as being "other directed." This statement seems to refer to the locus of control, i.e., whether an individual perceives that the control over his well-being comes from within himself or from others.

This concept of the locus of control (LOC) has been measured by an instrument developed by Rotter (1966) and further modified into a 46-item scale by Collins (1974). The LOC instrument measures the extent to which an individual perceives that his behavior leads to the attainment of meaningful goals. An internal (I) orientation on this scale implies that the individual perceives himself to be in control of those aspects of his environment that result in reinforcement, while an external (E) orientation is indicative of an individual who perceives that his reinforcement is under the control of others or luck. The literature dealing with locus of control, while not addressing itself to the level of stress found in a POW environment, does offer some limited support to the hypothesis that LOC orientation would show a relationship with the resistance posture assumed by a POW. Biondo and MacDonald (1971), Crowne and Leverant (1963), Phares (1976) and Rotter (1966) found that internals were less susceptible to attempts to influence their behavior than externals. Ritchie and Phares (1969) found that externals showed marked conformity when influenced by a prestigious source while internals did not. Further research (Lefcourt, 1967) has shown internals to be resistant to experimenter influence and manipulation whereas externals were readily compliant. Several studies have found that internals not only resist being

manipulated, but will actually move in a direction opposite to that attempted (Biondo and MacDonald, 1971; Gore, 1962; and Strickland, 1970).

While the above evidence strongly suggests that an internal orientation on LOC would be indicative of a firmer resistance posture in a POW environment, it is considerably short of testing this relationship in a setting which even approximates the stress of captivity. Lefcourt makes this point when he suggested that while:

Internals are more likely to resist some form of social pressure than are externals. Whether such resistance would persist against heightened pressure or increased inducements to acquiesce are questions requiring further empirical tests (Lefcourt, 1976, p. 48).

Unless this hypothesized relationship between LOC orientation and resistance behavior of a POW is tested in a realistic setting, one that at least approximates the stress of a POW compound, it will be impossible to bridge the gap between the LOC literature and POW research. The Resistance Training Laboratory (RTL) phase of the Navy's Survival, Evasion, Resistance, and Escape (SERE) course offers a realistic setting for establishing this bridge. The RTL is a simulated POW compound experience where high risk-of-capture personnel are taught the skills necessary to successfully resist coercive enemy interrogation and survive the POW experience with honor. Highly professional, well-trained instructors use selected coercive techniques to expose the student to the physical and emotional stress associated with being a POW. The vivid realism of this training creates an environment which is perceived as quite stressful by the student; however, this highly structured program in reality protects him from any actual danger.

Resistance behavior in this simulated POW compound was measured in terms of the degree of compliance exhibited by the student under two levels of stress: (1) a low level stress condition referred to as soft sell interrogation, where the interrogator/instructor plays the role of the "nice guy" and attempts to extract important information from the student by use of verbal persuasion techniques; (2) a high level stress condition referred to as hard sell interrogation, where the interrogator/instructor (with the assistance of an instructor playing the role of a "goon") attempts to gain important information from the student using well-controlled coercive techniques.

The previously cited studies would predict that the external student would be more compliant with the interrogator's demands, while the internal student would tend to offer considerably more resistance and withstand more stress before complying to these demands. The studies showing internals to be increasingly negativistic under increasing pressure would suggest that internal students would exhibit even greater resistance under hard sell interrogation than under soft

sell interrogation.

In addition to the resistance performance exhibited in hard and soft sell interrogation, another criterion of RTL performance investigated was the number of escapes attempted by a student. Previous studies found that internals were willing to take more risks than externals (Baron, 1968) and that internals seek more useable information from their immediate environment (Seeman and Evans, 1962). These results suggest that internals would initiate more escape attempts than externals, since a successful escape removes the student from an uncomfortable situation for the period he is gone, i.e., provides a desirable reinforcement.

Another goal of this research effort was to determine if a specific subscale of the LOC instrument would provide better prediction of resistance performance than the complete instrument. Collins (1974) found his LOC instrument to be multidimensional in content. It was therefore, reasoned that a single dimension of locus of control might well be more aligned with RTL performance than the more complex complete instrument.

A final objective of this study was to assess the effectiveness of the SERE course in meeting its primary training objective of increasing a student's confidence in his ability to cope with the stresses of captivity. Davis (1970) found that shifts in LOC orientation following brief, highly specific experiences are specific to that situation. In other words a shift toward the internal LOC orientation, evidenced by a change between pre-SERE and post-SERE LOC scores, would be indicative of an increase in the student's perceived control over his environment in a POW setting. This hypothesized shift toward the internal would imply an increase in the student's capability of coping with the stresses of captivity and an increase in his ability to resist attempts to change his attitudes and beliefs. If this shift could be shown to be directly attributable to the intervening SERE training program it would provide solid empirical evidence that the SERE course was accomplishing this important training objective. In order to determine that any obtained increase in perceived internal control found for SERE students was in fact a product of their SERE training, a sample of similar Navy personnel attending other training programs of similar duration was selected as a comparison group. These students were also given pre- and post-training LOC instruments. In order for a shift toward the internal in the SERE sample to be considered attributable to the SERE experience that shift would have to be significantly greater than that found for the comparison sample.

METHOD

Development of Performance Criteria

Two candidate instruments were developed to measure the resistance displayed by a student

under various levels of coercion in the hard sell and soft sell interrogation sessions.

1. *Extension of the Biderman category selection techniques.* This instrument was an extension of the student evaluation instrument currently utilized by SERE and required a two-step process. First, the instructor placed the student in one of five possible categories depicting the level of resistance exhibited: Complete Resistance, Defensive Resistance, Defensive Compliance, Active Compliance, and Complete Compliance. The instructor was assisted in his choice of category by a list of behaviors representative of performance in each category. The second step required the instructor to rate the student's performance within the selected category on a five-point Likert-type scale. This approach provided a range in resistance performance from 1 (weakest resistance within the complete compliance category) to 25 (strongest resistance within the complete resister category).

2. *A magnitude estimation technique.* This technique required the instructor to assign a numerical value reflecting his evaluation of student performance. The instructor accomplished this task by placing an "X" on a line anchored at the zero point by "complete compliance, in the middle or 50 unit point by "average level of resistance you have witnessed," and at the 100 unit point by "complete resistance." This technique thus provided for a range of performance scores from zero (weakest resistance) to 100 (strongest resistance).

Evaluation of candidate performance assessment instruments. Both candidate performance assessment instruments described above were evaluated in terms of inter-judge reliability under both hard sell and soft sell interrogations. This evaluation was accomplished by unobtrusively video taping nine soft sell and ten hard sell interrogation sessions during their occurrence at SERE. These sessions represented a continuum along the compliance-resistance spectrum. Seventeen hard sell instructors and 11 soft sell instructors viewed the taped sessions (counter-balanced for order of presentation) and recorded their assessments of the students' resistance performance using both candidate assessment instruments. The degree to which the instructors agreed with one another on their assessment of resistance performance in both hard sell and soft sell interrogations was determined by means of Kendall's coefficient of concordance (W) for both evaluation instruments.

Subjects

Three distinct samples were utilized in this study.

1. *Development Sample.* This sample consisted of 197 male Navy personnel comprising five consecutive SERE classes. Ninety of these subjects were officers and 107 were enlisted. The mean age was 25.2 years for officers and 22.3 years for enlisted. Seventy-five percent of the officers were college graduates, while less than one percent of the enlisted subjects were

college graduates. Mean time-in-service was 47.85 months and 43.98 months for officers and enlisted respectively. The major research hypotheses were tested on this sample.

2. *Cross-Validation Sample.* Eighty male Navy personnel comprising three consecutive SERE classes following the five classes used in the development sample were used to cross-validate the relationships found between the LOC subscales and SERE performance criteria in the main study. Forty-eight of these men were officers and 32 were enlisted.

3. *Comparison Sample.* This sample consisted of 128 male Navy personnel (46 enlisted and 82 officers). The enlisted personnel in this sample were engaged in an aircrewmembers swim course, while the officers were participating in the initial Naval Flight Officers' training program. They were similar in age and career orientation to the development sample subjects.

Instruments

1. *Locus of Control (LOC).* The modification by Collins (1974) of the Rotter (1966) I-E scale was used as the measure of locus of control. This scale consisted of 46 items in the form of statements about one's beliefs. Each item was scored 1 (strongly agree) through 5 (strongly disagree). The item score was weighted such that a high score was depictive of an external LOC orientation. The 46 items are listed in the appendix.

2. *Subjective Stress Scale (SSS).* This scale was developed by Kerle and Bialek (1958) to measure a subject's perceived stress under operational field conditions. This scale consists of a checklist of 11 adjectives. The subject selects that adjective which best describes his feeling at a given moment. The score on this scale is the scale value associated with the adjective selected. The SSS adjectives and the associated scale values were as follows: Wonderful - 1.25, Fine - 2.20, Steady - 3.38, Cool Headed - 3.60, Doesn't Bother Me - 5.30, Indifferent - 6.07, Timid - 6.98, Restless - 7.96, Shaky - 8.73, Scared - 9.79, and Terrified - 10.61.

3. *Student Identification Data Sheet.* This form requested the following information from each student: age, rank, status (Regular vs Reserve), time in service, weight, height, perceived health, perceived physical stamina, race, educational level, marital status, branch of service, job description, and prior experience with stress.

Development of LOC Subscales

The 46 LOC items were factor analyzed by the principal factors technique with a Varimax rotation to final solution. Five orthogonal factors were obtained by this process. Factor scores were computed for each of these five factors and correlated with performance in the hard sell interrogation. Those factors found to have a significant relationship with performance were converted to subscales by including in the selected subscales those items having a factor loading

of .40 or greater.

An additional subscale was developed by including all items that had a significant correlation ($p \leq .05$) with hard sell interrogation performance. This subscale was designated the LOC composite and consisted of 14 items. All subscales were scored by simply summing the scores of those items comprising them.

Procedure

1. *Development Sample.* Navy students from five consecutive Basic SERE classes at FASOTRA-GRUPAC San Diego, California, were asked to volunteer for a study concerning the SERE program, which would extend the information base of similar projects on POWs being conducted at the Center for Prisoner of War Studies. Prior to their RTL experience each student was given the following instruments:

1. The student identification data sheet.
2. Collins' 46 item LOC scale.
3. The Subjective Stress Scale (SSS) describing how they normally feel.
4. The SSS describing how they felt at the present moment.

While it was necessary within a given class to have the students fill out the instrumentation in the same order, across classes the instruments were completed in a different order as determined by a random numbers table.

Following the administration of these instruments the students entered the RTL or simulated POW experience. It was during this phase that the three performance criteria (hard sell interrogation, soft sell interrogation, and number of escape attempts) data were collected by the SERE instructors who were role-playing enemy soldiers and prison camp officials.

Approximately 19 hours after the RTL terminated the students were given the following instruments:

1. Collins' 46 item LOC scale.
2. The SSS describing how they felt during the RTL.
3. The SSS describing how they felt at the present moment.

2. *Cross-validation Sample.* The same procedure was utilized on this sample as was followed with the development sample with the exception that this group was not given the student identification data sheet. The main reason for utilizing this sample was to cross-validate any significant relationship between the LOC subscales and the three RTL performance criteria found in the main study.

3. *Comparison Sample.* This group of students was given the same instruments as the development sample (the SSS being modified as appropriate for this group) with the same interval

between administrations. The sole purpose for this sample was to provide a standard for comparing the pre-training to post-training LOC shift found for the RTL students.

RESULTS

Evaluation of the Candidate Assessment Instruments

Inter-judge reliability among instructors was assessed by means of Kendall's coefficient of concordance (W). For the 17 hard sell instructors this coefficient was .850 for the magnitude estimation scale and .867 for the modified Biderman scale. For the 11 soft sell instructors the value of W was .793 for the magnitude estimation scale and .808 for the modified Biderman scale. All four of these coefficients were highly significant ($p < .001$), indicating a high level of agreement among the instructors on what constituted good and poor resistance performance in interrogation. Since the Biderman scale had the highest inter-judge reliability for both hard and soft sell interrogations and since it represented a minimal change from the grading method typically utilized by the SERE instructors, it was selected as the performance assessment instrument for this study.

Perceived Level of Stress

The extent to which the subject perceived the simulated POW experience as stressful was measured by the Subjective Stress Scale (SSS). Table 1 lists the mean SSS values for the development sample (those subjects experiencing the simulated POW environment) and the comparison sample for each of four time periods. The stress perceived during the RTL training period was significantly greater than for any other period for the development sample:

Training versus Usual ($t = 21.02, p < .0001$)

Training versus Pre-Training ($t = 14.56, p < .0001$)

Training versus Post-Training ($t = 21.64, p < .0001$)

Table 1
Comparison of Mean Subjective Stress Scale Scores for the Development and Control
Samples at the Four Time Periods Measured

Time Period	Development Sample (N=197)		Control Sample (N=128)	
	Mean	S.D.	Mean	S.D.
Usual	1.93	1.79	1.80	1.75
Pre-Training	3.78	2.72	2.61	2.10
During Training	7.18	2.40	2.35	2.39
Post-Training	1.77	2.10	2.04	1.99

Additionally the perceived stress associated with the time period immediately prior to the RTL (most likely anticipatory in nature) was significantly greater than the usual perception of stress ($t = 8.94, p < .0001$) and also greater than the perception of stress during the post-training period ($t = 10.24, p < .0001$). A comparison of the RTL with the control sample on SSS scores revealed that the RTL was perceived as significantly more stressful than the training period for the comparison sample ($t = 17.7, p < .0001$) and the pre-training period was seen as significantly more stressful for the development sample than for the comparison sample ($t = 4.13, p < .0001$). The perception of usual stress and of post-training stress was not significantly different for these two samples ($p > .10$ in both cases). Although the above comparisons involved multiple t-tests, the overall protection level was .001 for all tests and precluded the requirement of a multiple comparisons approach.

LOC Subscales

The principal factors analysis of the 46 items produced five factors. These five factors accounted for 37.3 percent of the variance of the 46 items. The correlations between these five factors and the three RTL performance criteria revealed that only factors I and II demonstrated any significant correlation with any of the performance criteria. Two LOC subscales were therefore created from these two factors by including in the respective subscale those items possessing a loading of .40 or greater with that factor. The first subscale (Political) consisted of eight items (3, 4, 5, 17, 24, 25, 30 and 40) and reflected an individual's perceived control over political forces.

The second subscale (Personal) consisted of 13 items (10, 14, 20, 22, 27, 29, 31, 33, 35, 36, 39, 42 and 45) and reflected an individual's perceived control over his personal affairs. An additional subscale was created by including all items found to be significantly ($p < .05$) related to performance in hard sell interrogation. This subscale was designated the LOC composite and consisted of 14 items (1, 5, 10, 17, 20, 21, 22, 27, 29, 33, 36, 39, 40 and 42). The inter-correlations among these LOC subscales was as follows:

Political with Personal ($r = .374, p < .01$)

Political with LOC Composite ($r = .574, p < .001$)

Personal with LOC Composite ($r = .909, p < .001$)

COMPARISON BETWEEN OFFICER AND ENLISTED SUBJECTS

Table 2 illustrates the differences between enlisted and officer subjects on LOC and RTL performance variables. An examination of this Table reveals that, as a group, officers were more internal (as measured by the LOC total, Personal subscale, and LOC composite) and received

a higher performance rating in hard sell interrogation than did the enlisted subjects. Based on these obtained differences, all subsequent analysis was conducted separately for these two subject subgroups.

Table 2
Comparison Between Officers and Enlisted
Subjects on LOC and RTL Performance Measures

Variable	Enlisted (107)		Officers (90)		t
	Mean	Standard Deviation	Mean	Standard Deviation	
LOC Total	129.72	15.92	123.26	16.90	2.74**
Political Subscale	23.22	6.16	21.64	5.61	1.86
Personal Subscale	34.47	6.51	31.24	6.45	3.47***
LOC Composite	38.62	6.38	33.90	6.57	5.08***
Hard Sell Performance	15.92	6.33	17.98	5.28	-2.44*
Soft Sell Performance	14.99	5.19	16.17	5.14	-1.58
Escape Attempts	.295	.664	.389	.775	-.88

* .05

** .01

*** .001

Relationship Between LOC Instruments and Performance in the RTL

Table 3 shows the correlation between the four LOC instruments and the three RTL performance criteria for officer and enlisted students. As can be seen the officer-enlisted dichotomy acts as a moderator on the relationship between a student's LOC orientation and his performance in the RTL (a highly significant relationship for officers, but no relationship for enlisted students). Within the officer student group, internals (low score on LOC instrument) demonstrated superior performance in both hard sell and soft sell interrogations. While the LOC total instrument was significantly related to performance under both forms of interrogation, the personal subscale and the LOC composite exhibited an even higher correlation with these performance criteria. In all cases the LOC instrument exhibited a larger correlation with hard sell performance than with soft sell performance. The hypothesized relationship between LOC and escape attempts was not found for either student group.

TABLE 3

Relationship Between the Research Instruments and RTL Performance for Officers
(N = 90) and Enlisted (N = 107)

Research Instruments	Hard Sell		Soft Sell		Escape Attempts	
	Officers	Enlisted	Officers	Enlisted	Officers	Enlisted
LOC Total	-.359***	-.037	-.228**	-.098	-.120	-.099
LOC (Political Subscale)	-.217*	-.069	-.136	-.054	-.108	-.021
LOC (Personal Subscale)	-.500***	-.066	-.287**	-.088	-.116	-.085
LOC Composite	-.546***	-.116	-.318***	-.115	-.120	-.115

*p < .05

**p < .01

***p < .001

Since it was impossible to control for such extraneous parameters as age, rank, education, service time, and status (regular vs. reserve), and since these parameters were found to be significantly related to LOC orientation (See Table 4), they were partialled out of the relationship between the LOC instruments and RTL performance criteria. This procedure is a technique for statistically controlling for the effects of extraneous variables. Table 5 illustrates the relationship between the LOC instruments and performance after the effects of these demographic variables have been accounted for. For both hard and soft sell interrogation the partial correlation coefficients were actually increased by this procedure.

TABLE 4

Relationship Between Demographic Variables and RTL Performance
Criteria for Officers (N = 90) and Enlisted (N = 107)

Demographic Variables	Hard Sell		Soft Sell		Escape Attempts	
	Officers	Enlisted	Officers	Enlisted	Officers	Enlisted
Rank	.100	.162	.025	.058	.491***	.143
Height	.068	.083	.013	.042	-.067	-.012
Weight	.003	-.010	-.114	.047	.071	-.039
Service Time	-.002	.186	.015	.096	.318**	.080
Status	.075	-.282**	-.137	-.055	-.104	-.062
Health	.102	-.091	-.004	-.026	-.072	-.026
Age	.112	.101	-.049	.054	.466***	.028
Education	.033	.007	-.374***	.073	.125	.098

** p < .01 ***p < .001

TABLE 5

Relationship Between LOC and RTL Performance After
Statistical Control of Demographic Variables

LOC Instruments	Hard Sell		Soft Sell		Escapes	
	Officers	Enlisted	Officers	Enlisted	Officers	Enlisted
LOC Total	-.363***	-.057	-.282**	-.106	-.090	-.090
LOC (Political Subscale)	-.226*	-.145	-.156	-.080	-.120	-.034
LOC (Personal Subscale)	-.514***	-.101	-.322***	-.094	-.061	-.072
LOC Composite	-.554***	-.186	-.353***	-.122	-.061	-.104

*p < .05 **p < .01 ***p < .001

Differences in Mean Performance Between Internals and Externals

Another way of examining the relationship between LOC and performance in the RTL is to compare the mean performance levels of internals and externals as determined by the total LOC instrument and by the personal subscale of the LOC. An internal student was defined as one whose standard score on either instrument was equal to or less than a negative .43 (the lower third of the normal distribution of standard scores). An external was likewise defined as a student whose standard score on either instrument was equal to or greater than .43 (the upper third of the normal distribution of standard scores). As can be seen from Table 6 internals, as determined

Table 6

**Comparison of Mean Performance in RTL Between
Externals and Internals**

Instrument	Criterion	Mean Performance for Internals	Mean Performance for Externals	t
Total LOC	Hard Sell	18.45	15.07	3.21***
	Soft Sell	16.27	14.89	1.38
	Escape Attempts	.460	.294	1.00
Personal Subscale	Hard Sell	19.17	14.94	3.73***
	Soft Sell	16.75	14.64	2.01*
	Escape Attempts	.441	.208	1.90*

* $P < .05$

*** $P < .001$

by the LOC personal subscale, do significantly better on all three performance measures; however, when the total LOC instrument was used, this superiority was found only for resistance performance in the hard sell interrogations. The former measure seems, therefore, to be a more valid discriminator of performance in the highly stressful environment of the RTL.

Cross-Validation Sample

Table 7 lists the correlation coefficients found between the LOC instruments and RTL performance in the cross-validation sample for officers and enlisted students. The main objective for including this sample was to cross-validate the relationships found in the main study between LOC subscales and RTL performance and to replicate the findings for the total LOC

instrument. The results of this effort reveal a rather substantial reduction in the relationship

Table 7

Relationship Between the LOC Instruments and RTL Performance for
Officers (N=48) and Enlisted (N=32) in the Cross-Validation Sample

LOC Instruments	Hard Sell		Soft Sell		Escapes	
	Officer	Enlisted	Officer	Enlisted	Officer	Enlisted
Total LOC	-.142	-.082	-.346**	-.326*	-.038	-.317*
LOC (Political)	.131	-.017	-.266*	-.305*	-.040	-.193
LOC (Personal)	-.207	-.119	-.448***	-.285	-.032	-.368*
LOC Composite	-.110	-.158	-.445***	-.373*	.000	-.273

* $p < .05$

** $p < .01$

*** $p < .001$

between the LOC instruments and performance in hard sell interrogation; however, the relationship between the LOC instruments and performance in soft sell interrogation was cross-validated for all four LOC instruments in the officer group. While the cross-validation coefficients for the LOC instruments were not significant for hard sell performance, they were all in the hypothesized direction and serve to strengthen confidence that a real relationship exists between LOC and performance in hard sell interrogation.

As was the case in the main study, the officer-enlisted dichotomy moderated the relationship between LOC and RTL performance. An exception to this was the marginal significance ($p < .05$) found in the enlisted subgroup for the relationship between number of escapes and two LOC instruments (LOC total and the personal subscale).

Effect of RTL Experience on Student

In order to determine the effect of the RTL experience on the students' perceived locus of control, the LOC (total instrument) was given before they began the training and 19 hours after the RTL terminated. The analysis of the obtained shift in LOC was conducted separately for officer and enlisted students. For enlisted students the mean pre-training LOC was 129.72, the

mean post-training LOC was 126.73 representing a shift toward the internal of 2.99 ($t = 3.56$, $p < .001$). For officer students the mean pre-training LOC was 123.26, the mean post-training LOC was 120.47 representing a shift of 2.79 toward the internal ($t = 3.29$, $p < .005$). A similar analysis of the officer students in the control sample revealed a pre-training LOC mean of 121.33 and a post-training LOC mean of 119.70 representing a shift toward the internal of 1.54 (not significant). The mean pre-training LOC for enlisted students in the control sample was 131.33, the mean post-training LOC for these students was 130.33 representing a shift toward the internal of 1.00 (not significant). Dunnett's (1955) t statistic for comparing treatment means against a control was used to test the hypothesis that the shift toward the internal for the development sample (RTL) was greater than the corresponding shift for the control sample. The overall mean shift in LOC was 2.90 toward the internal for the RTL students and 1.40 for the control students ($t = 1.81$, $p < .05$), thus the RTL experience produced a significantly greater shift toward the internal than did a control training experience of a similar duration.

DISCUSSION

The Resistance Training Laboratory (RTL) phase of the SERE course was perceived as extremely stressful in terms of the SSS. The difference between the mean SSS associated with usual stress and that associated with the perceived stress of the RTL was over twice the shift required by the developers of this instrument (Kerle & Blalk, 1958) to demonstrate a meaningful shift in perceived stress. This same interpretation can be made when comparing the mean SSS for the RTL to that for the training period for the control sample.

As was suggested by the literature, internals were better able to resist the attempts of an interrogator to gain information. The more intense the pressure, the greater the disparity between the internal's performance and that of the external. One of the main contributions of this study is that for the first time the relationship between LOC and resistance to influence has been demonstrated in a documented highly stressful environment; supporting Lefcourt's (1976) untested hypothesis that internals would require a significantly greater amount of trauma before giving in to the demands of others.

The failure of the relationship between LOC and resistance performance in hard sell interrogation to reach significance in the cross-validation sample reduces the potential value of LOC as a predictor of resistance behavior under high stress conditions. A possible explanation for this reduced relationship is the fact that the RTL experience for the development sample occurred during the Winter and Spring, whereas for the cross-validation sample this experience took place during the extremely hot Summer. While it is true that the RTL experience is quite

different during these two periods, the determination of whether this difference was responsible for the reduced validity of LOC remains the goal for future research.

The hypothesis that internals would attempt more escapes than externals was supported in only one instance -- the mean number of escapes for internals was significantly greater than the mean for externals when the personal subscale was used as the measure of locus of control. This finding does not answer the question of whether this relationship was due to internals being more willing to take a risk or whether due to his perception of greater control, the internal does not judge the behavior (attempting an escape) to be as risky as does the external. The present authors contend that internals will see themselves as more capable of influencing their environment, and thus are more likely to perceive a moderate risk as within their ability to accomplish successfully.

The hypothesis that a subscale of the LOC would be more predictive of RTL performance than the total instrument was verified. It was found that the subscale measuring the perceived level of personal control over one's own destiny consistently explained a greater proportion of the criterion variance than explained by the total LOC instrument. This superiority was substantiated in the cross-validation sample. The LOC composite evidenced an even stronger relationship with performance; however, the high correlation between the LOC composite and the personal subscale ($r = .909, p < .001$) suggested that personal control was the dominant construct underlying the relationship between the LOC composite and RTL performance.

The lack of any relationship between measure of LOC and RTL resistance behavior for the enlisted subjects in the development sample was an unexpected finding. While it is true that as a group officers were more internal and exhibited greater resistance, this does not explain the lack of relationship within the enlisted subgroup. The similarity in LOC and RTL performance variance between these two subgroups rules out curtailment of variance as an explanation. While the two groups may have received differential treatment, there was no difference between them in terms of the perceived stressfulness of this experience. A more likely explanation for this phenomenon is a difference in the value attached to a high performance rating. The present authors hypothesize that officers perceive their RTL performance rating as important to their careers and therefore place a high value on this rating. The enlisted student, on the other hand, perceives this training experience as one that must be completed; however, he does not perceive his actual performance rating as having a direct impact on his future in the Navy. Social learning theory would predict that even if an individual did perceive himself to be in control of attaining this reinforcement, i.e., an internal locus of control, if he did not place a high value on the reinforcement itself, he would not be motivated to achieve it. This finding has

rather definite implications for improvement of the training program. Unless the enlisted student can be made to see that his performance in the RTL is relevant to his future career, he will not be sufficiently motivated to excel in this demanding situation.

The significant shift in LOC orientation toward the internal as a result of SERE training indicated that the student perceives himself to have more control over this stressful experience at the end of training than he did at the beginning. This finding provides support that SERE is accomplishing its primary training objective--increasing a student's confidence that he has the necessary skills to successfully cope with the extreme stress of being a POW without compromising either his nation or his fellow POWs. The results of this study confirm Admiral Stockdale's original contention that the personality of a POW plays a major role in determining those POWs who were capable of coping with the stresses of captivity and those who were not. The perception of some control over his dismal environment is an essential characteristic for a POW to carry into captivity. To the extent that this perception can be enhanced by specific training experiences, the student's chances of coping with the stresses of captivity will be significantly increased. The challenge facing the SERE community is to structure the RTL experience in such a way that each student will learn where and how he can realistically gain a semblance of personal control over a situation that appears on the surface to be totally beyond his control.

The periodic administration of the 13 item Personal subscale of the LOC pre-and post-training would enable the SERE staff to systematically monitor the degree to which this increased perception of control was being attained by the students during the course of their SERE program. An ongoing monitoring effort of this nature would address the criticism that SERE has no objective mechanism for assessing how effectively the training objectives are being met. It would also provide a criterion for evaluating the impact of any designed changes in the curriculum.

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APPENDIX

Locus of Control Scale Items

1. In the long run people get the respect they deserve in this world.
2. Sometimes I feel that I don't have enough control over the direction my life is taking.
3. By taking an active part in political and social affairs the people can control world events.
4. It is difficult for people to have much control over the things politicians do in office.
5. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
6. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
7. It is impossible for me to believe that chance or luck plays an important part in my life.
8. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
9. The idea that teachers are unfair to students is nonsense.
10. It is hard to know whether or not a person really likes you.
11. What happens to me is my own doing.
12. When I make plans, I am almost certain that I can make them work.
13. No matter how hard you try some people just don't like you.
14. Many times we might just as well decide what to do by flipping a coin.
15. Capable people who fail to become leaders have not taken advantage of their opportunities.
16. People are lonely because they don't try to be friendly.
17. The average citizen can have an influence in government decisions.
18. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
19. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
20. Most people don't realize the extent to which their lives are controlled by accidental happenings.
21. Most of the time I can't understand why politicians behave the way they do.
22. Sometimes I can't understand how teachers arrive at the grades they give.
23. People's misfortunes result from the mistakes they make.
24. In the long run the people are responsible for bad government on a national as well as on a local level.

25. There will always be wars, no matter how hard people try to prevent them.
26. There's not much use in trying too hard to please people, if they like you, they like you.
27. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
28. There really is no such thing as "Luck."
29. There is a direct connection between how hard I study and the grades I get.
30. With enough effort we can wipe out political corruption.
31. Without the right breaks one cannot be an effective leader.
32. People who can't get others to like them don't understand how to get along with others.
33. Many times exam questions tend to be so unrelated to course work that studying is really useless.
34. How many friends you have depends upon how nice a person you are.
35. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
36. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
37. Most misfortunes are the result of lack of ability, ignorance, laziness or all three.
38. I have often found that what is going to happen will happen.
39. Getting a good job depends mainly on being in the right place at the right time.
40. This world is run by the few people in power, and there is not much the little guy can do about it.
41. In my case getting what I want has little or nothing to do with luck.
42. Most students don't realize the extent to which their grades are influenced by accidental happenings.
43. Many of the unhappy things in people's lives are partly due to bad luck.
44. In the long run the bad things that happen to us are balanced by the good ones.
45. Many times I feel that I have little influence over the things that happen to me.
46. One of the major reasons why we have wars is because people don't take enough interest in politics.

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of Naval officers and enlisted men undergoing the Navy's West Coast Survival, ~~Evasion~~, Resistance, ~~Evasion~~, and Escape Course. Cross-validation and control samples were also utilized. Internals were able to resist the demands of interrogators to a greater extent than externals and internals attempted more escapes than externals. A personal subscale of the LOC instrument provided better prediction of performance than did the total instrument. These results were substantiated in a cross-validation study and the implications of these results to SERE training were discussed.

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